INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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September 4, 2002

Jeff Copeland
International Fuel Systems
2902 Enterprise Drive
Anderson, Indiana 46013

Re: Registered Construction and Operation Status,
R 081-15817-00041

Dear Mr. Copeland:

The application from International Fuel Systems, received on August 22, 2002, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.1 and 326 IAC 2-5.5, it has been determined that the following operation, located at 980 Hurricane Road, Franklin, Indiana 46131, is classified as registered:

(a) Nineteen (19) natural gas-fired unit heaters, using liquid propane gas as a backup fuel, maximum heat input capacity: 0.13 million British thermal units per hour, each.

(b) Four (4) cold cleaner parts washers, constructed in 1999, using less than five percent (5%) halogenated solvents by weight, capacity: 1.7 gallons per day, total.

(c) Welding operations, including one (1) metal inert gas (MIG) welding station with a maximum wire consumption rate of 0.01042 pounds per hour, one (1) tungsten inert gas (TIG) welding station with a maximum wire consumption rate of 0.03125 pounds per hour, and one (1) oxyacetylene welding station, with a maximum wire consumption rate of 0.00087 pounds per hour.

(d) One (1) natural gas-fired pyrolysis cleaning furnace, identified as bake-off oven #1, with a maximum heat input capacity of 0.95 million British thermal units per hour, utilizing one (1) direct flame afterburner as an integral part of the furnace, rated at 0.75 million British thermal units per hour, and exhausting to stack E-38, capacity: 19 pounds of engine parts per hour.

(e) One (1) natural gas-fired burn-off oven, identified as E39, with a maximum heat input capacity of 0.1 million British thermal units per hour, utilizing one (1) direct flame afterburner as an integral part of the oven, rated at 0.1 million British thermal units per hour, all exhausting through stack E-39, capacity: 76 pounds of engine parts per hour.

(f) One (1) enclosed shotblasting process, identified as Glass Bead Blaster, consisting of two (2) hand blasters and two (2) auto blasters, equipped with a dust collector (B-1) and exhausting inside the building, capacity: 101.8 pounds of glass beads per hour and 94 pounds of parts per hour, total.

(g) One (1) enclosed shotblaster, identified as Steel Blaster, equipped with a dust collector (B-2) and exhausting inside the building, capacity: 800 pounds of steel shot per hour and 242 pounds of parts per hour.

The following conditions shall be applicable:

1. Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary alternative opacity limitations), opacity shall meet the following:

   (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

   (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuos opacity monitor in a six (6) hour period.

2. Any change or modification which may increase the potential to emit a combination of HAPs, PM, PM_{10}, VOC, SO_2, or NO_X to twenty five (25) tons per year, a single HAP to ten (10) tons per year, or CO to one hundred (100) tons per year from this source shall require approval from IDEM, OAQ prior to making the change.

3. Pursuant to 326 IAC 8-3-5(a) (Cold Cleaner Degreaser Operation and Control), the owner or operator of the four (4) cold cleaner parts washers without remote solvent reservoirs shall:

   (a) Equip the degreaser with a cover. The cover must be designed so that it can be easily operated with one (1) hand if:

      (1) The solvent volatility is greater than two (2) kiloPascals (fifteen (15) millimeters of mercury or three-tenths (0.3) pounds per square inch) measured at thirty-eight degrees Celsius (38EC) (one hundred degrees Fahrenheit (100EF));

      (2) The solvent is agitated; or

      (3) The solvent is heated.

   (b) Equip the degreaser with a facility for draining cleaned articles. If the solvent volatility is greater than four and three-tenths (4.3) kiloPascals (thirty-two (32) millimeters of mercury or six-tenths (0.6) pounds per square inch) measured at thirty-eight degrees Celsius (38EC) (one hundred degrees Fahrenheit (100EF)), then the drainage facility must be internal such that articles are enclosed under the cover while draining. The drainage facility may be external for applications where an internal type cannot fit into the cleaning system.

   (c) Provide a permanent, conspicuous label which lists the operating requirements outlined in subsection (b).

   (d) The solvent spray, if used, must be a solid, fluid stream and shall be applied at a pressure which does not cause excessive splashing.

   (e) Equip the degreaser with one (1) of the following control devices if the solvent volatility is greater than four and three-tenths (4.3) kiloPascals (thirty-two (32) millimeters of mercury or six-tenths (0.6) pounds per square inch) measured at thirty-eight degrees Celsius (38EC) (one hundred degrees Fahrenheit (100EF)), or if the solvent is heated to a temperature greater than forty-eight and nine-tenths degrees Celsius (48.9EC) (one hundred twenty degrees Fahrenheit (120EF)):

(1) A freeboard that attains a freeboard ratio of seventy-five hundredths (0.75) or greater.

(2) A water cover when solvent is used is insoluble in, and heavier than, water.

(3) Other systems of demonstrated equivalent control such as a refrigerated chiller of carbon adsorption. Such systems shall be submitted to the U.S. EPA as a SIP revision.

4. Pursuant to 326 IAC 8-3-5(b) (Cold Cleaner Degreaser Operation and Control), the owner or operator of the four (4) cold cleaner parts washers, shall:

(a) Close the cover whenever articles are not being handled in the degreaser.

(b) Drain cleaned articles for at least fifteen (15) seconds or until dripping ceases.

(c) Store waste solvent only in covered containers and prohibit the disposal or transfer of waste solvent in any manner in which greater than twenty percent (20%) of the waste solvent by weight could evaporate.

5. The owner or operator of the four (4) cold cleaner parts washers shall also comply with 326 IAC 8-3-2. Compliance with 326 IAC 8-3-5 shall also ensure compliance with 326 IAC 8-3-2.

6. Pursuant to 326 IAC 6-3-2(e)(1) (Particulate emission limitations, work practices, and control technologies), the particulate matter (PM) from the one (1) enclosed shotblasting process, identified as Glass Bead Blaster, shall be limited to 0.864 pounds per hour, when operating at a process weight rate of 195.8 pounds per hour.

7. Pursuant to 326 IAC 6-3-2(e)(1) (Particulate emission limitations, work practices, and control technologies), the particulate matter (PM) from the one (1) enclosed shotblaster, identified as Steel Blaster, shall be limited to 2.65 pounds per hour, when operating at a process weight rate of 1,042 pounds per hour.

The limitations in Conditions 6 and 7 are based on the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

8. In order to comply with Condition 6, the dust collector (B-1) for particulate control shall be in operation and control emissions from the one (1) enclosed shotblasting process, identified as Glass Bead Blaster, at all times that the one (1) enclosed shotblasting process, identified as Glass Bead Blaster, is in operation.

9. In order to comply with Condition 7, the dust collector (B-2) for particulate control shall be in operation and control emissions from the one (1) enclosed shotblaster, identified as Steel Blaster, at all times that the one (1) enclosed shotblaster, identified as Steel Blaster, is in operation.

This registration is the first registration issued to this source. The source has been operating under Exempt Construction and Operation Status 081-12761-00041, issued on February 7, 2001. This registration

is necessary due to the construction of the two (2) new shotblasting operations and one (1) new burn-off oven at the existing source. The source may construct the new emission units according to 326 IAC 2-5.1-2 and operate the source according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Quality that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.1-2(f)(3) and 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

Compliance Branch
Office of Air Quality
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Original signed by Paul Dubenetzky

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

CAP/MES

cc: File - Johnson County
Johnson County Health Department
Air Compliance - Vaughn Ison
Permit Filing - Lisa Lawrence
Air Programs Section- Michele Boner
Compliance Branch - Karen Nowak

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name:	**International Fuel Systems**
Source Location:	**980 Hurricane Road, Franklin, Indiana 46131**
County:	**Johnson**
SIC Code:	**3519**
Operation Permit No.:	**R 018-15817-00041**
Permit Reviewer:	**CarrieAnn Paukowits**

The Office of Air Quality (OAQ) has reviewed an application from International Fuel Systems relating to the construction and operation of two (2) shotblasting operations and one (1) burn-off oven at an existing, previously exempt marine engine production source and the operation of that source.

Permitted Emission Units and Pollution Control Equipment

The source consists of the following permitted emission units and pollution control devices:

(a) Nineteen (19) natural gas-fired unit heaters, using liquid propane gas as a backup fuel, maximum heat input capacity: 0.13 million British thermal units per hour, each.

(b) Four (4) cold cleaner parts washers, constructed in 1999, using less than five percent (5%) halogenated solvents by weight, capacity: 1.7 gallons per day, total.

(c) Welding operations, including one (1) metal inert gas (MIG) welding station with a maximum wire consumption rate of 0.01042 pounds per hour, one (1) tungsten inert gas (TIG) welding station with a maximum wire consumption rate of 0.03125 pounds per hour, and one (1) oxyacetylene welding station, with a maximum wire consumption rate of 0.00087 pounds per hour.

(d) One (1) natural gas-fired pyrolysis cleaning furnace, identified as bake-off oven #1, with a maximum heat input capacity of 0.95 million British thermal units per hour, utilizing one (1) direct flame afterburner as an integral part of the furnace, rated at 0.75 million British thermal units per hour, and exhausting to stack E-38, capacity: 19 pounds of engine parts per hour.

All other previously permitted emission units have been removed from this source.

Unpermitted Emission Units and Pollution Control Equipment

There are no unpermitted facilities operating at this source during this review process.

New Emission Units and Pollution Control Equipment

The application includes information relating to the construction and operation of the following equipment:

(e) One (1) natural gas-fired burn-off oven, identified as E39, with a maximum heat input capacity of 0.1 million British thermal units per hour, utilizing one (1) direct flame afterburner as an integral part of the oven, rated at 0.1 million British thermal units per hour, all exhausting through stack E-39, capacity: 76 pounds of engine parts per hour.

(f) One (1) enclosed shotblasting process, identified as Glass Bead Blaster, consisting of two (2) hand blasters and two (2) auto blasters, equipped with a dust collector (B-1) and exhausting inside the building, capacity: 101.8 pounds of glass beads per hour and 94 pounds of parts per hour, total.

(g) One (1) enclosed shotblaster, identified as Steel Blaster, equipped with a dust collector (B-2) and exhausting inside the building, capacity: 800 pounds of steel shot per hour and 242 pounds of parts per hour.

Existing Approvals

The source has been operating under previous approvals including, but not limited to, the following:

(a) CP 081-5398-00041, issued under the name Marine Corporation of America, Inc., on December 9, 1997; and

(b) Exempt Construction and Operation Status 081-12761-00041, issued under the name Marine Corporation of America, Inc., on February 7, 2001.

The Exempt Construction and Operation Status (081-12761-00041) was issued after the dynamometers and spray paint booth were removed from the source. At that time, the source no longer required an Operating Permit nor a Registration because the potential to emit was reduced below registration and permit levels. Pursuant to Exempt Construction and Operation Status (081-12761-00041), the exemption superseded the previous air approval (CP 081-5398-00041), issued on December 9, 1997.

All conditions from previous approvals were incorporated into this permit except those previously superseded and the following:

Exempt Construction and Operation Status 081-12761-00041, issued on February 7, 2001

Condition 2: The particulate matter (PM) from the one (1) metal inert gas (MIG) welding station, one (1) tungsten inert gas (TIG) welding station, and one (1) oxyacetylene welding station with plasma arc cutting (PAC) shall be limited to 0.551 pounds per hour because the combined process weight rate is less than 100 pounds per hour.

Reason not incorporated: Pursuant to 326 IAC 6-3-1(b)(9), effective June 12, 2002, welding is exempt from the requirements of 326 IAC 6-3, Particulate Emission Limitations for Manufacturing Processes, provided that less than six hundred twenty-five (625) pounds of rod or wire is consumed per day. The potential rod and wire usage from the total of all welding operations at this source is less than 1.03 pounds per day. Therefore, these welding operations are exempt from this rule. The plasma arc cutting operations have been removed from the source.

Air Pollution Control Justification as an Integral Part of the Process

The company has submitted the following justification such that the dust collectors (B-1 and B-2) controlling PM and PM_{10} from the proposed shotblasting operations be considered as an integral part of the shotblasting process:

The dust collectors are necessary for operation because they capture the shot material, which is then continuously recycled and re-thrown in the machine. The main function of the dust collectors is to capture shot for reuse in the machine, not air pollution control.

IDEM, OAQ has evaluated the justifications and determined that the dust collectors will not be considered as an integral part of the shotblasting process. Pursuant to 326 IAC 1-2-55, a control device is only considered integral to the process if it is necessary for the facility to produce its normal product or is necessary for normal operation of the facility. The shotblasters can produce the desired product without controls. Therefore, the dust collectors are not considered integral and the permitting level will be determined using the potential to emit before the use of the dust collectors.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (EF)
E-38	Pyrolysis Furnace (bake-off oven #1)	22	0.75	9,000	450
E-39	Burn-off Oven (E39)	24	0.75	9,000	450
EW-1	General Building Ventilation	26	0.33	8,500	70
EW-2	General Building Ventilation	26	0.33	8,500	70

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on April 5, 2002, with additional information received on May 24, May 31, and June 28, 2002. A Minor Source Operating Permit for this source was on public notice from July 24 through August 23, 2002. On August 22, 2002, the source submitted updated information indicating that the capacity of the proposed Steel Blaster will be 800 pounds per hour, instead of 1,100 pounds per hour. As a result of this change, the MSOP was not required and a Registration is prepared for this source. For the purposes of time clock accountability, the application date indicated in the Registration will be August 22,

2002, which is the date this approval became a Registration.

Emission Calculations

See pages 1 through 14 of 14 of Appendix A of this document for detailed emissions calculations.

Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency."

Pollutant	**Potential To Emit** (tons/year)
PM	20.0
PM_{10}	20.1
SO_2	0.532
VOC	2.85
CO	3.68
NO_X	3.12

HAPs	**Potential To Emit** (tons/year)
Tetrachloroethene	0.004
Manganese	8.82E-6
Chromium	2.72E-5
Benzene	4.01E-5
Dichlorobenzene	1.03E-4
Formaldehyde	0.001
Hexane	0.035
Toluene	6.51E-5
Lead	9.57E-6
Cadmium	2.11E-5
Nickel	4.01E-5
TOTAL	0.040

(a) The potentials to emit (as defined in 326 IAC 2-5.1-2) of PM and PM_{10} are less than twenty-five (25) tons per year and greater than five (5) tons per year. Therefore, the source is

subject to the provisions of 326 IAC 2-5.1-2 and 326 IAC 2-5.5.

(b) Fugitive Emissions
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Actual Emissions

No previous emission data has been received from the source.

Limited Potential to Emit

The table below summarizes the total potential to emit, reflecting all limits, of the significant emission units.

	Limited Potential to Emit (tons/year)						
Process/facility	**PM**	**PM_{10}**	**SO_2**	**VOC**	**CO**	**NO_X**	**HAPs**
Nineteen (19) unit heaters	0.047	0.082	0.007	0.060	0.909	1.66	0.020
Four (4) cold cleaner parts washers	0.00	0.00	0.00	2.12	0.00	0.00	0.004
Welding operations	0.002	0.002	0.00	0.00	0.00	0.00	negligible
One (1) natural gas-fired pyrolysis cleaning furnace (bake-off oven #1)	0.305	0.348	0.108	0.166	1.04	0.870	0.014
One (1) proposed natural gas-fired burn-off oven (E39)	1.17	1.18	0.417	0.504	1.73	0.587	0.002
One (1) proposed enclosed shotblasting process (Glass Bead Blaster)*	3.78	4.46	0.00	0.00	0.00	0.00	0.00
One (1) proposed enclosed shotblaster (Steel Blaster)*	11.6	14.0	0.00	0.00	0.00	0.00	0.00
Total Emissions	16.9	20.1	0.532	2.85	3.68	3.12	0.040

*The potential to emit PM from the shotblasting process (Glass Bead Blaster) and the shotblaster (Steel Blaster) in this table is the maximum limited potential to emit based on the limited hourly emissions based on 326 IAC 6-3-2, as indicated in the State Rule Applicability - Individual Facilities

section of this document.

County Attainment Status

The source is located in Johnson County.

Pollutant	Status
PM_{10}	attainment
SO_2	attainment
NO_2	attainment
Ozone	attainment
CO	attainment
Lead	attainment

(a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Johnson County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Johnson County has been classified as attainment or unclassifiable for all remaining criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This source, based on the total emissions from the emission units covered in this permit, is still not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

(a) each criteria pollutant is less than one hundred (100) tons per year,

(b) a single hazardous air pollutant (HAP) is less than ten (10) tons per year, and

(c) any combination of HAPs is less than twenty-five (25) tons per year.

This status is based on all the air approvals issued to the source. This status has been verified by the OAQ inspector assigned to the source.

Federal Rule Applicability

(a) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) applicable to this source.

(b) The existing pyrolysis cleaning furnace and the proposed burn-off oven are not subject to the requirements of the New Source Performance Standards, 326 IAC 12, (40 CFR 60.50, 60.50a, 60.50b and 60.50c, Subpart E, Ea, Eb and Ec) because these furnaces do not burn solid waste, municipal waste or medical waste. These furnaces are used to clean engine

parts.

(c) There are still no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14, 326 IAC 20, 40 CFR Part 61 and 40 CFR Part 63) applicable to this source.

(d) The four (4) cold cleaner parts washers are not subject to the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPs), Part 63, Subpart T, because the cold cleaners do not use halogenated solvents in a total concentration greater than five percent (5%) by weight.

(e) The existing pyrolysis cleaning furnace and the proposed burn-off oven are not subject to the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPs), Part 63, Subpart EEE, because these furnaces do not burn hazardous waste. These furnaces are used to clean engine parts.

State Rule Applicability - Entire Source

326 IAC 2-2 (Prevention of Significant Deterioration)

This source, including the proposed modification, is not a major source pursuant to 326 IAC 2-2 and 40 CFR 52.21 because the potential to emit of each criteria pollutant is still less than 250 tons per year, and it is not in one of the 28 listed source categories. Therefore, the requirements of 326 IAC 2-2 and 40 CFR 52.21 do not apply.

326 IAC 2-6 (Emission Reporting)

This source is not subject to 326 IAC 2-6 (Emission Reporting), because the potentials to emit PM_{10}, SO_2, NO_X, VOC and CO are less than one hundred (100) tons per year.

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary alternative opacity limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

Opacity testing by the source is not specifically required in this approval.

State Rule Applicability - Individual Facilities

326 IAC 4-2-2 (Incinerators)

The existing pyrolysis cleaning furnace and the proposed burn-off oven do not combust waste. Therefore, pursuant to 326 IAC 1-2-34, “Incinerator” definition, these facilities are not incinerators. Thus, the requirements of 326 IAC 4-2-2 are not applicable.

326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes)

(a) Pursuant to 326 IAC 6-3-1(b)(9), effective June 12, 2002, welding is exempt from the requirements of 326 IAC 6-3, Particulate Emission Limitations for Manufacturing Processes, provided that less than six hundred twenty-five (625) pounds of rod or wire is consumed per day. The potential rod and wire usage from the total of all welding operations at this source is less than 1.03 pounds per day. Therefore, these welding operations are exempt from this rule.

(b) Pursuant to 326 IAC 6-3-1(b)(14), effective June 12, 2002, the one (1) existing pyrolysis cleaning furnace and one (1) proposed burn-off oven are exempt from the requirements of 326 IAC 6-3, Particulate Emission Limitations for Manufacturing Processes, because the potential PM emissions from each facility is less than 0.551 pound per hour.

(c) Pursuant to 326 IAC 6-3-2(e)(1), the particulate emission rate from the one (1) proposed enclosed shotblasting process, identified as Glass Bead Blaster, shall not exceed 0.864 pounds per hour, when operating at a process weight rate of 195.8 pounds per hour. The potential to emit PM before controls is 1.02 pounds per hour from this facility, and the potential to emit PM is 0.010 pounds per hour after control by the dust collector. Therefore, the dust collector must be in operation at all times when the Glass Bead Blaster is in operation in order to comply with this limit. This limitation is based on the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

(d) Pursuant to 326 IAC 6-3-2(e)(1), the particulate emission rate from the one (1) proposed enclosed shotblaster, identified as Steel Blaster, shall not exceed 2.65 pounds per hour, when operating at a process weight rate of 1,042 pounds per hour. The potential to emit PM before controls is 3.20 pounds per hour from this facility, and the potential to emit PM is 0.032 pounds per hour after control by the dust collector. Therefore, the dust collector must be in operation at all times when the shot blaster is in operation in order to comply with this limit. This limitation is based on the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

326 IAC 8-3 (Organic Solvent Degreasing Operations)

The four (4) cold cleaner parts washers, constructed in 1999, are all cold cleaner degreasers without remote solvent reservoirs. Therefore, the requirements of 326 IAC 8-3-2, Organic Solvent Degreasing Operations: Cold Cleaner Operation, and 326 IAC 8-3-5, Organic Solvent Degreasing Operations: Cold Cleaner Degreaser Operation and Control, are applicable. Compliance with 326 IAC 8-3-5 will satisfy the requirements of 326 IAC 8-3-2.

(a) Pursuant to 326 IAC 8-3-5(a) (Cold Cleaner Degreaser Operation and Control), the owner or operator of the cold cleaner degreasers shall ensure that the following requirements are met:

(1) Equip the degreaser with a cover. The cover must be designed so that it can be easily operated with one (1) hand if:

(A) The solvent volatility is greater than two (2) kiloPascals (fifteen (15) millimeters of mercury or three-tenths (0.3) pounds per square inch) measured at thirty-eight degrees Celsius (38EC) (one hundred degrees Fahrenheit (100EF));

(B) The solvent is agitated; or

(C) The solvent is heated.

(2) Equip the degreaser with a facility for draining cleaned articles. If the solvent volatility is greater than four and three-tenths (4.3) kiloPascals (thirty-two (32) millimeters of mercury or six-tenths (0.6) pounds per square inch) measured at thirty-eight degrees Celsius (38EC) (one hundred degrees Fahrenheit (100EF)), then the drainage facility must be internal such that articles are enclosed under the cover while draining. The drainage facility may be external for applications where an internal type cannot fit into the cleaning system.

(3) Provide a permanent, conspicuous label which lists the operating requirements outlined in subsection (b).

(4) The solvent spray, if used, must be a solid, fluid stream and shall be applied at a pressure which does not cause excessive splashing.

(5) Equip the degreaser with one (1) of the following control devices if the solvent volatility is greater than four and three-tenths (4.3) kiloPascals (thirty-two (32) millimeters of mercury or six-tenths (0.6) pounds per square inch) measured at thirty-eight degrees Celsius (38EC) (one hundred degrees Fahrenheit (100EF)), or if the solvent is heated to a temperature greater than forty-eight and nine-tenths degrees Celsius (48.9EC) (one hundred twenty degrees Fahrenheit (120EF)):

(A) A freeboard that attains a freeboard ratio of seventy-five hundredths (0.75) or greater.

(B) A water cover when solvent is used is insoluble in, and heavier than, water.

(C) Other systems of demonstrated equivalent control such as a refrigerated chiller of carbon adsorption. Such systems shall be submitted to the U.S. EPA as a SIP revision.

(b) Pursuant to 326 IAC 8-3-5(b) (Cold Cleaner Degreaser Operation and Control), the owner or operator of the cold cleaning degreasers shall ensure that the following operating requirements are met:

(1) Close the cover whenever articles are not being handled in the degreaser.

(2) Drain cleaned articles for at least fifteen (15) seconds or until dripping ceases.

(3) Store waste solvent only in covered containers and prohibit the disposal or transfer of waste solvent in any manner in which greater than twenty percent (20%) of the waste solvent by weight could evaporate.

326 IAC 9-1-2 (Carbon monoxide emission limits)

The existing pyrolysis cleaning furnace and the proposed burn-off oven are not subject to the requirements of 326 IAC 9-1-2 (Carbon monoxide emission limits) because these furnaces do not burn solid waste.

326 IAC 11-6 (Hospital/Medical/Infectious Waste Incinerators)

The existing pyrolysis cleaning furnace and the proposed burn-off oven are not subject to the requirements of 326 IAC 11-6 (Hospital/Medical/Infectious Waste Incinerators) because these furnaces do not burn medical, infectious or hospital waste.

326 IAC 11-7 (Municipal Waste Combustors)

The existing pyrolysis cleaning furnace and the proposed burn-off oven are not subject to the requirements of 326 IAC 11-7 (Municipal Waste Combustors) because these furnaces do not burn municipal waste.

Conclusion

The construction and operation of the two (2) shotblasting operations and one (1) burn-off oven at an existing marine engine production source and the operation of that source shall be subject to the conditions of the attached proposed Registration 081-15817-00041.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

Nineteen (19) heaters

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
2.47	21.64

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.021	0.082	0.006	1.08	0.060	0.909

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).
See page 2 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
HAPs Emissions

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

HAPs - Organics

	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	2.27E-05	1.30E-05	8.11E-04	1.95E-02	3.68E-05

HAPs - Metals

	Lead	Cadmium	Chromium	Manganese	Nickel	Total HAPs
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03	
Potential Emission in tons/yr	5.41E-06	1.19E-05	1.51E-05	4.11E-06	2.27E-05	0.020

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emission Calculations
LPG-Propane -Commercial Boilers
(Heat input capacity: > .3 MMBtu/hr and < 10 MMBtu/hr)

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

Nineteen (19) heaters using backup fuel

Heat Input Capacity MMBtu/hr	Potential Throughput kgals/year	SO2 Emission factor = 0.10 x S S = Sulfur Content =	0.05
2.47	236.47		

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/kgal	0.4	0.4	0.005 *(0.10S)*	14.0	0.5 **TOC value	1.9
Potential Emission in tons/yr	0.047	0.047	0.001	1.66	0.059	0.225

*PM emission factor is filterable PM only. PM10 emission factor is assumed to be the same as PM based on a footnote in Table 1.5-1, therefore PM10 is filterable only as well.
**The VOC value given is TOC. The methane emission factor is 0.2 lb/kgal.

Methodology

1 gallon of LPG has a heating value of 94,000 Btu
1 gallon of propane has a heating value of 91,500 Btu (use this to convert emission factors to an energy basis for propane)
(Source - AP-42 (Supplement B 10/96) page 1.5-1)
Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1kgal per 1000 gallon x 1 gal per 0.0915 MMBt

Emission Factors are from AP42 (Supplement B 10/96), Table 1.5-1 (SCC #1-02-010-02)

Emission (tons/yr) = Throughput (kgals/yr) x Emission Factor (lb/kgal) / 2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

Appendix A: Emissions Calculations
Degreasing

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

Material	Maximum Consumption (gallons/hr)	Material Density (lbs/gal)	Maximum Consumption (lbs/hr)	Weight % VOC	Weight % Tetrachloroethene	VOC Emissions (tons/yr)	Tetrachloroethene Emissions (tons/yr)
Degreasing							
Safety Kleen Premium Solvent	0.070	6.910	0.484	100%	0.0%	2.12	0.000
Safety Kleen 105 Solvent Recycled	0.070	6.700	0.469	100%	0.2%	2.05	0.004
CC 100 + Parts Washing Solvent	0.070	6.540	0.458	100%	0.0%	2.01	0.000
Safety Kleen 105 Solvent Virgin	0.070	6.700	0.469	100%	0.0%	2.05	0.000

Total State Potential Emissions	**TOTALS:**	**(tons/yr):**	**2.12**	**0.004**

METHODOLOGY

VOC/HAPs emission rate (tons/yr) = Material Usage (lbs/hr) * Weight % VOC/HAP * 8760 hrs/yr * 1 ton/2000 lbs

Appendix A: Welding and Thermal Cutting

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

PROCESS	Number of Stations	Max. electrode consumption per station		EMISSION FACTORS * (lb pollutant / lb electrode)				EMISSIONS (lb/hr)				TOTAL HAPS (lb/hr)
WELDING		(lbs/hr)		PM = PM10	Mn	Ni	Cr	PM = PM10	Mn	Ni	Cr	
Submerged Arc	0	0		0.036				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Metal Inert Gas (MIG)(ER5154)	1	0.01042		0.0241	0.00003		0.00001	2.51E-04	3.54E-07	0.00E+00	1.04E-07	4.58E-07
Stick (E7018 electrode)	0	0		0.0211				0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tungsten Inert Gas (TIG)(carbon steel)	1	0.03125		0.0055				1.72E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Oxyacetylene(carbon steel)	1	0.00087		0.0055				4.79E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	Number of Stations	Max. Metal Thickness Cut	Max. Metal Cutting Rate	EMISSION FACTORS (lb pollutant/1,000 inches cut, 1" thick)				EMISSIONS (lbs/hr)				TOTAL HAPS (lb/hr)
FLAME CUTTING		(in.)	(in./minute)	PM = PM10	Mn	Ni	Cr	PM = PM10	Mn	Ni	Cr	
Oxyacetylene	0	0	0	0.1622	0.0005	0.0001	0.0003	0.000	0.000	0.000	0.000	0.000
Oxymethane	0	0	0	0.0815	0.0002		0.0002	0.000	0.000	0.000	0.000	0.000
Plasma	0	0	0					0.000	0.000	0.000	0.000	0.000

EMISSION TOTALS	PM = PM10	Mn	Ni	Cr	Total HAPs
Potential Emissions lbs/hr	0.0004	3.54E-07	0.00E+00	1.04E-07	4.58E-07
Potential Emissions lbs/day	0.010	8.50E-06	0.00E+00	2.50E-06	1.10E-05
Potential Emissions tons/year	**0.002**	1.55E-06	0.00E+00	4.56E-07	2.01E-06

METHODOLOGY

*Emission Factors are default values for carbon steel unless a specific electrode type is noted in the Process column. Consult AP-42 or other reference for different electrode types.
Welding emissions, lb/hr: (# of stations)(max. lbs of electrode used/hr/station)(emission factor, lb. pollutant/lb. of electrode used)
Cutting emissions, lb/hr: (# of stations)(max. metal thickness, in.)(max. cutting rate, in./min.)(60 min./hr.)(emission factor, lb. pollutant/1,000 in. cut, 1" thick)
Emissions, lbs/day = emissions, lbs/hr x 24 hrs/day
Emissions, tons/yr = emissions, lb/hr x 8,760 hrs/day x 1 ton/2,000 lbs.
Plasma cutting emission factors are from the American Welding Society study published in Sweden (March 1994).
Welding and other flame cutting emission factors are from an internal training session document.
See AP-42, Chapter 12.19 for additional emission factors for welding.

Appendix A: Emission Calculations
Incinerator Emission Factors
for Existing Pyrolysis Cleaning Furnace

Company Name: **International Fuel Systems**
Address City IN Zip: **980 Hurricane Road, Franklin, Indiana 46131**
Registration: **081-15817**
Plt ID: **081-00041**
Reviewer: **CarrieAnn Paukowits**
Date: **August 22, 2002**

THROUGHPUT lbs/hr	THROUGHPUT tons/yr
19	83.2

	POLLUTANT				
	PM	SO2	CO	VOC	NOX
Emission Factor in lb/ton	7.0	2.5	10.0	3.0	3.0
Potential Emissions in ton/yr	0.291	0.104	0.416	0.125	0.125

Methodology

Emission factors are from AP 42 (5th Edition 1/95) Table 2.1-12, Uncontrolled emission factors for industrial/commercial refuse combustors, multiple chambers
Throughput (lb/hr) * 8760 hr/yr * ton/2000 lb = throughput (ton/yr)

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

Existing pyrolysis cleaning furnace with afterburner

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
1.7	14.89

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.014	0.057	0.004	0.745	0.041	0.625

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).
See page 8 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
HAPs Emissions

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

HAPs - Organics

	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	1.56E-05	8.94E-06	5.58E-04	1.34E-02	2.53E-05

HAPs - Metals

	Lead	Cadmium	Chromium	Manganese	Nickel	Total HAPs
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03	
Potential Emission in tons/yr	3.72E-06	8.19E-06	1.04E-05	2.83E-06	1.56E-05	0.014

Methodology is the same as page 7.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emission Calculations
Incinerator Emission Factors
for Proposed Burn-off Oven

Company Name: **International Fuel Systems**
Address City IN Zip: **980 Hurricane Road, Franklin, Indiana 46131**
Registration: **081-15817**
Plt ID: **081-00041**
Reviewer: **CarrieAnn Paukowits**
Date: **August 22, 2002**

THROUGHPUT lbs/hr	THROUGHPUT tons/yr
76	333

	POLLUTANT				
	PM	SO2	CO	VOC	NOX
Emission Factor in lb/ton	7.0	2.5	10.0	3.0	3.0
Potential Emissions in ton/yr	1.17	0.416	1.66	0.499	0.499

Methodology

Emission factors are from AP 42 (5th Edition 1/95) Table 2.1-12, Uncontrolled emission factors for industrial/commercial refuse combustors, multiple chambers
Throughput (lb/hr) * 8760 hr/yr * ton/2000 lb = throughput (ton/yr)

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

Proposed burn-off oven with afterburner

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
0.20	1.75

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.002	0.007	0.001	0.088	0.005	0.074

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).
See page 11 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
HAPs Emissions

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

HAPs - Organics

	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	1.84E-06	1.05E-06	6.57E-05	1.58E-03	2.98E-06

HAPs - Metals

	Lead	Cadmium	Chromium	Manganese	Nickel	Total HAPs
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03	
Potential Emission in tons/yr	4.38E-07	9.64E-07	1.23E-06	3.33E-07	1.84E-06	0.002

Methodology is the same as page 10.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emission Calculations
Abrasive Blasting - Confined
Steel Blaster

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

Table 1 - Emission Factors for Abrasives

	Emission Factor	
Abrasive	lb PM / lb abrasive	lb PM10 / lb PM
Sand	0.041	0.70
Grit	0.010	0.70
Steel Shot	0.004	0.86
Other	0.010	

Table 2 - Density of Abrasives (lb/ft3)

Abrasive	Density (lb/ft3)
Al oxides	160
Sand	99
Steel	487

Table 3 - Sand Flow Rate (FR1) Through Nozzle (lb/hr)

Flow rate of Sand Through a Blasting Nozzle as a Function of Nozzle pressure and Internal Diameter

	Nozzle Pressure (psig)							
Internal diameter, in	30	40	50	60	70	80	90	100
1/8	28	35	42	49	55	63	70	77
3/16	65	80	94	107	122	135	149	165
1/4	109	138	168	195	221	255	280	309
5/16	205	247	292	354	377	420	462	507
3/8	285	355	417	477	540	600	657	720
7/16	385	472	560	645	755	820	905	940
1/2	503	615	725	835	945	1050	1160	1265
5/8	820	990	1170	1336	1510	1680	1850	2030
3/4	1140	1420	1670	1915	2160	2400	2630	2880
1	2030	2460	2900	3340	3780	4200	4640	5060

Calculations

Adjusting Flow Rates for Different Abrasives and Nozzle Diameters

Flow Rate (FR) (lb/hr) = **800** per nozzle
Provided by the applicant

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =	0.004
FR = Flow Rate (lb/hr) =	800
w = fraction of time of wet blasting =	0 %
N = number of nozzles =	1

Uncontrolled Emissions =	**3.20 lb/hr**
	14.0 ton/yr

Control Efficiency = 99%

Controlled Emissions =	**0.032 lb/hr**
	0.140 ton/yr

METHODOLOGY

Emission Factors from STAPPA/ALAPCO "Air Quality Permits", Vol. I, Section 3 "Abrasive Blasting" (1991 edition)
Ton/yr = lb/hr X 8760 hr/yr X ton/2000 lbs
Flow Rate (FR) (lb/hr) = FR1 x (ID/ID1)2 x (D/D1)
E = EF x FR x (1-w/200) x N
w should be entered in as a whole number (if w is 50%, enter 50)

Appendix A: Emission Calculations
Abrasive Blasting - Confined
Glass Bead Blaster

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

Table 1 - Emission Factors for Abrasives

	Emission Factor	
Abrasive	lb PM / lb abrasive	lb PM10 / lb PM
Sand	0.041	0.70
Grit	0.010	0.70
Steel Shot	0.004	0.86
Other	0.010	

Table 2 - Density of Abrasives (lb/ft3)

Abrasive	Density (lb/ft3)
Al oxides	160
Sand	99
Steel	487

Table 3 - Sand Flow Rate (FR1) Through Nozzle (lb/hr)

Flow rate of Sand Through a Blasting Nozzle as a Function of Nozzle pressure and Internal Diameter

	Nozzle Pressure (psig)							
Internal diameter, in	30	40	50	60	70	80	90	100
1/8	28	35	42	49	55	63	70	77
3/16	65	80	94	107	122	135	149	165
1/4	109	138	168	195	221	255	280	309
5/16	205	247	292	354	377	420	462	507
3/8	285	355	417	477	540	600	657	720
7/16	385	472	560	645	755	820	905	940
1/2	503	615	725	835	945	1050	1160	1265
5/8	820	990	1170	1336	1510	1680	1850	2030
3/4	1140	1420	1670	1915	2160	2400	2630	2880
1	2030	2460	2900	3340	3780	4200	4640	5060

Calculations

Adjusting Flow Rates for Different Abrasives and Nozzle Diameters

Flow Rate (FR) = Abrasive flow rate (lb/hr) with internal nozzle diameter (ID)

FR1 = Sand flow rate (lb/hr) with internal nozzle diameter (ID1) From Table 3 =	63
D = Density of abrasive (lb/ft3) From Table 2 =	160
D1 = Density of sand (lb/ft3) =	99
ID = Actual nozzle internal diameter (in) =	0.125
ID1 = Nozzle internal diameter (in) from Table 3 =	0.125

Flow Rate (FR) (lb/hr) = **101.818** per nozzle

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =	0.010
FR = Flow Rate (lb/hr) =	101.818
w = fraction of time of wet blasting =	0 %
N = number of nozzles =	1

Uncontrolled Emissions =	**1.02 lb/hr**
	4.46 ton/yr

Control Efficiency = 99%

Controlled Emissions =	**0.010 lb/hr**
	0.045 ton/yr

METHODOLOGY

Emission Factors from STAPPA/ALAPCO "Air Quality Permits", Vol. I, Section 3 "Abrasive Blasting" (1991 edition)
Ton/yr = lb/hr X 8760 hr/yr X ton/2000 lbs
Flow Rate (FR) (lb/hr) = FR1 x (ID/ID1)2 x (D/D1)
E = EF x FR x (1-w/200) x N
w should be entered in as a whole number (if w is 50%, enter 50)

Appendix A: Emission Calculations
Total Emissions from Pages 1-13

Company Name: International Fuel Systems
Address City IN Zip: 980 Hurricane Road, Franklin, Indiana 46131
Registration: 081-15817
Plt ID: 081-00041
Reviewer: CarrieAnn Paukowits
Date: August 22, 2002

Potential to Emit before Controls

							Individual HAPs											
Process	PM	PM10	VOC	NOx	SO2	CO	Tetrachloroethene	Manganese	Chromium	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene	Lead	Cadmium	Nickel	Total HAPs
Proposed Steel Shotblating	14.0	14.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proposed Glass Bead Blating	4.46	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proposed Burn-off Oven	1.17	1.18	0.504	0.587	0.417	1.73	0.00	3.33E-07	1.23E-06	1.84E-06	1.05E-06	6.57E-05	1.58E-03	2.98E-06	4.38E-07	9.64E-07	1.84E-06	0.002
Four (4) Cold Cleaner Parts Washers	0.00	0.00	2.12	0.00	0.00	0.00	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.004
Welding	0.002	0.002	0.00	0.00	0.00	0.00	0.00	1.55E-06	4.56E-07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.01E-06
Existing Pyrolysis Cleaning Furnace	0.305	0.348	0.166	0.870	0.108	1.04	0.00	2.83E-06	1.04E-05	1.56E-05	8.94E-05	5.58E-04	1.34E-02	2.53E-05	3.72E-06	8.19E-06	1.56E-05	0.014
Nineteen (19) Space Heaters*	0.047	0.082	0.060	1.66	0.007	0.909	0.00	4.11E-06	1.51E-05	2.27E-05	1.30E-05	8.11E-04	1.95E-02	3.68E-05	5.41E-06	1.19E-05	2.27E-05	0.020
Total	**20.0**	**20.1**	**2.85**	**3.12**	**0.532**	**3.68**	**0.004**	**8.82E-06**	**2.72E-05**	**4.01E-05**	**1.03E-04**	**1.43E-03**	**3.45E-02**	**6.51E-05**	**9.57E-06**	**2.11E-05**	**4.01E-05**	**0.040**

*The potential to emit from the space heaters is the worst case potential to emit when operating on natural gas or liquid propane gas.